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10/670,513	09/26/2003	Jean Steinmetz	Q77594	8638

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
ZHENG, LOIS L	

ART UNIT	PAPER NUMBER
1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/670,513	STEINMETZ ET AL.	
	Examiner	Art Unit	
	LOIS ZHENG	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 May 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14-59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-59* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. Claims 14-19 and 21-23 are amended in view of applicant's amendment filed 18 May 2009. New claims 26-55 are added in view of applicant's amendment. Claims 1-13 are canceled in view of applicant's amendment.

The status identifiers for claims 24-25 and 56-59 are incorrect. Claims 24-25 are previously presented, therefore, should be identified as "previously presented". Claims 56-59 are new claims, therefore, should be identified as "new".

Therefore, claims 14-59 are currently under examination.

Status of Previous Rejections

2. All previous rejections are withdrawn in view of applicant's persuasive arguments regarding Derule and Emmonds.

New rejection grounds are established below. Therefore, this office action is made **Non-Final**.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 14, 18, 21-22, 26, 29 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derule et al. US 5,683,751(Derule'751), and further in view of Derule et al. US 5,814,247(Derule'247).

Derule'751 teaches a process for forming a temporary protective coating, comprising treating galvanized steel surfaces with a coating solution comprising aliphatic monocarboxylic acid with 6-12 carbons, the solution having a pH of below 7 (abstract, col. 2 lines 21-25). An example of the monocarboxylic acid is heptanoic acid(col. 3 line 35).

Regarding claims 14, 18, 21-22, 26, 29 and 32, the coating process steps as taught by Derule'751 are substantially similar to the claimed coating process steps.

However, Derule'751 does not explicitly teach the claimed oxidizing conditions being obtained by addition of a chemical agent as recited in claim 14.

Derule'247 teaches a carboxylic acid-based corrosion inhibiting composition comprising heptanoic acids and derivatives thereof, and oxidizing agent such as nitrite and perborate(col. 3 lines 51-52, col. 4 lines 7-11).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the oxidizing agents such as nitrite and perborate as taught by Derule'247 into the coating solution Of Derule'751 in order to simplify the processing of the effluent and reduces cost as taught by Derule'247(col. 4 lines 35-40).

In addition, the coating composition of Derule'751 further comprises tolyltriazole in the amount of 0.5-5g/l(col. 3 lines 49-51) and the molar ratio of monocarboxylic acid salt and the triazole in the coating solution ranges from 0.4 to 10(col. 3 lines 1-5). In addition, example 3 of Derule'751 teaches that 1.5g/l of tolyltriazole is 0.013 mole/l and 12g/l of sodium heptanoate is 0.08 mole/l(col. 5 lines 58-62). Therefore, the broadest tolyltiazole range of 0.5-5g/l is equivalent to 0.0043 – 0.043 moles/l. Based on the

molar ratio of monocarboxylic acid salt and the triazole of 0.4-10, the monocarboxylic acid salt in the coating solution of Derule'751 is calculated to be 0.00172 – 0.43 moles/l, which overlaps the claimed organic acid range of 0.1-1.5moles/l. Furthermore, with the addition of oxidizing agents as taught by Derule'247, the concentration of heptonoic acid in the coating solution of Derule'751 in view of Derule'247 can be further lowered (Derule'247: col. 4 lines 35-40). Therefore, a prima facie case of obviousness exists. See MPEP 2144.05. The selection of claimed organic acid range from the disclosed range of Derule'751 in view of Derule'247 would have been obvious to one skilled in the art since Derule'751 in view of Derule'247 teach the same utilities in their disclosed monocarboxylic acid concentration range.

Regarding claim 16, even though Derule'751 in view of Derule'247 do not explicitly teach the claimed coating weight, one of ordinary skill in the art would have found it obvious to have routinely optimized the coating weight via varying the coating time in order to achieve desired performance in the corrosion protecting coating.

Regarding claims 19-20, Derule'751 further teaches that the treated galvanized steel sheet is oiled and rolled(i.e. formed/shaped)(col. 2 lines 44-49). Even though Derule'751 does not explicitly teach that the galvanized steel sheet is shaped by stamping, one of ordinary skill in the art would have found it obvious that the claimed subsequent shaping by any techniques, including stamping or rolling, can be applied to the process of Derule'751 in view of Derule'247 with expected success.

5. Claims 23-25, 27, 30 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derule'751 in view of Derule'247, and further in view of Speckmann et al. US 5,230,730 (Speckmann).

The teachings of Derule'751 in view of Derule'247 are discussed in paragraph 4 above. However, Derule'751 in view of Derule'247 do not explicitly teach the claimed combination of two organic acids.

Speckmann teaches an anti-rust emulsion comprising carboxylic acids as corrosion inhibitors, wherein suitable carboxylic acids include straight-chain fatty acids such as hexanoic, heptanoic decanoic and undecanoic acids(i.e. substantially similar to claimed undecenoic acid), and branched chain or unsaturated carboxylic acids such as oleic and linoleic acids(col. 2 lines 38-55, col. 4 lines 28-55).

Regarding claims 23-25, 27, 30 and 33, one of ordinary skill in the art would have found it obvious to have incorporated a combination of heptanoic, decanoic, undecenoic, oleic and/or linoleic acids as taught by Speckmann into the coating solution of Derule'751 in view of Derule'247 with expected success since Speckmann teaches that such a group of carboxylic acids are functionally equivalent corrosion inhibitors.

6. Claims 28 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derule'751 in view of Derule'247 and Speckmann, and further in view of Bürge et al. US 5,916,483 (Bürge).

The teachings of Derule'751 in view of Derule'247 and Speckmann are discussed in paragraph 5 above. However, Derule'751 in view of Derule'247 and Speckmann do not explicitly teach the claimed saturated dicarboxylic acids.

Bürge teaches a corrosion inhibiting composition comprising carboxylic acids as corrosion inhibitors, wherein suitable carboxylic acids include sebacic, oleic and linoleic acids(col. 7 lines 18-20).

Regarding claims 28 and 31, one of ordinary skill in the art would have found it obvious to have incorporated a combination of sebacic, oleic and linoleic acids as taught by Bürge into the coating solution of Derule'751 in view of Derule'247 and Speckmann with expected success since Bürge teaches that sebacic, oleic and linoleic acids are functionally equivalent corrosion inhibitors.

7. Claims 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derule'751 in view of Derule'247 and further in view of Flasch et al. US 3,776,881 B1 (Flasch).

The teachings of Derule'751 in view of Derule'247 are discussed in paragraph 4 above. However, Derule'751 in view of Derule'247 do not explicitly teach the claimed diacetone alcohol as co-solvent.

Flasch teaches an acidic corrosion inhibiting coating composition comprising carboxylic acids such as caproic(i.e. hexanoic), capric(i.e. decanoic), oleic and sebacic acids(col. 3 lines 41-43, col. 3 lines 49-61) and solvents such as diacetone alcohol(col. 3 lines 24-29).

Regarding claims 34-35, it would have been obvious to one of ordinary skill in the art to have incorporated diacetone alcohol as taught by Flasch into the coating solution of Derule'751 in view of Derule'247 with expected success since Flasch teaches

solvents such as diacetone alcohol are suitable for a corrosion inhibiting coating solution comprising claimed types of carboxylic acids.

8. Claims 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derule'751 in view of Derule'247 and further in view of Hughes et al. US 6,206,982 B1 (Hughes).

The teachings of Derule'751 in view of Derule'247 are discussed in paragraph 4 above. However, Derule'751 in view of Derule'247 do not explicitly teach the addition of rare earth metals in the +3 oxidation state as claimed.

Hughes teaches the application of a conversion coating to metal surfaces, wherein the conversion coating comprises rare earth metals in +3 oxidation state(col. 3 line 61 – col. 4 line 15) and in a concentration of below 50g/l(col. 4 lines 24-26). The coating composition of Hughes further comprises mono- and/or di-carboxylic acids(col. 6 lines 53-49).

Regarding claim 37, it would have been obvious to one of ordinary skill in the art to have incorporated rare earth metal in +3 oxidation state and in a concentration of below 50g/l as taught by Hughes into the coating solution of Derule'751 in view of Derule'247 in order to improve the adhesion of the conversion coating and accelerate the coating process as taught by Hughes(col. 2 lines 1-3).

In addition, the concentration of rare earth metal in the coating composition of Derule'751 in view of Derule'247 and Hughes overlaps the claimed concentration of greater than or equal to $1x10^{-3}$ mole/l. Therefore, a prima facie case of obviousness exists. See MPEP 2144.04. The selection of claimed rare earth metal concentration

range from the disclosed range of Derule'751 in view of Derule'247 and Hughes would have been obvious to one skilled in the art since Derule'751 in view of Derule'247 and Hughes teach the same utilities in their disclosed rare earth metal concentration range.

Furthermore, the pH of the coating solution of Derule'751 in view of Derule'247 and Hughes overlaps the claimed pH of higher than 4. Therefore, a prima facie case of obviousness exists. See MPEP 2144.04. The selection of claimed pH range from the disclosed range of Derule'751 in view of Derule'247 and Hughes would have been obvious to one skilled in the art since Derule'751 in view of Derule'247 and Hughes teach the same utilities in their disclosed pH range.

Regarding claim 13, even though Derule'751 in view of Derule'247 and Hughes do not explicitly teach that the rare earth metal is claimed gadolinium, one of ordinary skill in the art would have found the use of gadolinium as the rare earth metal in the coating composition of Derule'751 in view of Derule'247 and Hughes obvious and with expected success since gadolinium has similar properties as other rare earth metals, therefore, should behave similarly to other rare earth metals taught by Hughes.

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Derule'751 in view of Derule'247, and further in view of Melotik US 3,969,152(Melotik).

The teachings of Derule'751 in view of Derule'247 are discussed in paragraph 4 above. However, Derule'751 in view of Derule'247 do not explicitly teach the claimed post treatment using a bath containing rare earth metals.

Melotik teaches an post treatment rinse for metal coatings, wherein the post treatment rinse solution is comprises at least 0.0005M of rare earth metal(col. 3 lines

20-27). Table II of Melotik further shows that an example of rare earth metal salt is cerous nitrate(i.e. Ce^{3+}).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the post treatment coating process of Melotik into the coating process of Derule'751 in view of Derule'247 in order to substantially increase the corrosion and humidity resistance of conversion coated metal surfaces and to improve the surface's receptivity to subsequent adherent coats of paint as taught by Melotik(col. 1 lines 42-59).

In addition, the rare earth metal concentration in the post treatment solution as taught by Derule'751 in view of Derule'247 and Melotik overlaps the claimed rare earth metal concentration of greater than or equal to $1x10^{-3}$ mole/l. Therefore, a prima facie case of obviousness exists. See MPEP 2144.04. The selection of claimed rare earth metal concentration range from the disclosed range of Derule'751 in view of Derule'247 and Melotik would have been obvious to one skilled in the art since Derule'751 in view of Derule'247 and Melotik teach the same utilities in their disclosed rare earth metal concentration range.

10. Claims 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derule'751 and further in view of Berner et al. US 4,612,049(Berner).

The teachings of Derule'751 are discussed in paragraph 4 above. However, Derule'751 does not explicitly teach the claimed use of electrical current to obtain oxidizing conditions.

Berner teaches a process for forming a conversion coating on a metal surface by treating the metal surface with a corrosion-inhibiting coating solution comprising an aliphatic mono- or di- carboxylic acids having a particular formula(abstract). Berner further teaches that a conversion coating can be applied by various methods including spraying, brushing, roller-coating, dipping or electrodeposition(col. 13 lines 3-11).

Regarding claim 15, it would have been obvious to one of ordinary skill in the art to have substituted the spraying coating technique as taught by Derule'751(col. 1 lines 40-41) with the electrodeposition technique as taught by Berner with expected success since Berner's teaching shows that spraying coating and electrodeposition coating are functionally equivalent methods to apply a conversion coating.

Regarding claims 38, 41, 44, 50 and 52-56, the instant claims are rejected for the same reasons set forth in the rejection of claims 16, 18-22, 26, 29 and 32 above.

11. Claims 39, 42, 45 and 57-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derule'751 in view of Berner, and further in view of Speckmann.

The teachings of Derule'751 in view of Berner are discussed in paragraph 10 above. However, Derule'751 in view of Berner do not explicitly teach the claimed combination of two organic acids.

The teachings of Speckmann are discussed in paragraph 5 above.

Regarding claims 39, 42, 45 and 57-59, one of ordinary skill in the art would have found it obvious to have incorporated a combination of heptanoic, decanoic, undecenoic, oleic and/or linoleic acids as taught by Speckmann into the coating solution

of Derule'751 in view of Berner with expected success since Speckmann teaches that such a group of carboxylic acids are functionally equivalent corrosion inhibitors.

12. Claims 40 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derule'751 in view of Berner and Speckmann, and further in view of Bürge.

The teachings of Derule'751 in view of Berner and Speckmann are discussed in paragraph 11 above. However, Derule'751 in view of Berner and Speckmann do not explicitly teach the claimed saturated dicarboxylic acids.

Bürge teaches a corrosion inhibiting composition comprising carboxylic acids as corrosion inhibitors, wherein suitable carboxylic acids include sebacic, oleic and linoleic acids(col. 7 lines 18-20).

Regarding claims 40 and 43, one of ordinary skill in the art would have found it obvious to have incorporated a combination of sebacic, oleic and linoleic acids as taught by Bürge into the coating solution of Derule'751 in view of Berner and Speckmann with expected success since Bürge teaches that sebacic, oleic and linoleic acids are functionally equivalent corrosion inhibitors.

13. Claims 46-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derule'751 in view of Derule'247, in view of Berner, and further in view of Flasch et al. US 3,776,881 B1 (Flasch).

The teachings of Derule'751 in view of Berner are discussed in paragraph 10 above. However, Derule'751 in view of Berner do not explicitly teach the claimed diacetone alcohol as co-solvent.

Flasch teaches an acidic corrosion inhibiting coating composition comprising carboxylic acids such as caproic(i.e. hexanoic), capric(i.e. decanoic), oleic and sebacic acids(col. 3 lines 41-43, col. 3 lines 49-61) and solvents such as diacetone alcohol(col. 3 lines 24-29).

Regarding claims 46-47, it would have been obvious to one of ordinary skill in the art to have incorporated diacetone alcohol as taught by Flasch into the coating solution of Derule'751 in view of Berner with expected success since Flasch teaches solvents such as diacetone alcohol are suitable for a corrosion inhibiting coating solution comprising claimed types of carboxylic acids.

14. Claims 48-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Derule'751 in view of Berner and further in view of Hughes.

The teachings of Derule'751 in view of Berner are discussed in paragraph 10 above. However, Derule'751 in view of Berner do not explicitly teach the addition of rare earth metals in the +3 oxidation state as claimed.

Hughes teaches the application of a conversion coating to metal surfaces, wherein the conversion coating comprises rare earth metals in +3 oxidation state(col. 3 line 61 – col. 4 line 15) and in a concentration of below 50g/l(col. 4 lines 24-26). The coating composition of Hughes further comprises mono- and/or di-carboxylic acids(col. 6 lines 53-49).

Regarding claim 48, it would have been obvious to one of ordinary skill in the art to have incorporated rare earth metal in +3 oxidation state and in a concentration of below 50g/l as taught by Hughes into the coating solution of Derule'751 in view of

Berner in order to improve the adhesion of the conversion coating and accelerate the coating process as taught by Hughes(col. 2 lines 1-3).

In addition, the concentration of rare earth metal in the coating composition of Derule'751 in view of Berner and Hughes overlaps the claimed concentration of greater than or equal to $1x10^{-3}$ mole/l. Therefore, a prima facie case of obviousness exists. See MPEP 2144.04. The selection of claimed rare earth metal concentration range from the disclosed range of Derule'751 in view of Berner and Hughes would have been obvious to one skilled in the art since Derule'751 in view of Berner and Hughes teach the same utilities in their disclosed rare earth metal concentration range.

Furthermore, the pH of the coating solution of Derule'751 in view of Berner and Hughes overlaps the claimed pH of higher than 4. Therefore, a prima facie case of obviousness exists. See MPEP 2144.04. The selection of claimed pH range from the disclosed range of Derule'751 in view of Berner and Hughes would have been obvious to one skilled in the art since Derule'751 in view of Berner and Hughes teach the same utilities in their disclosed pH range.

Regarding claim 13, even though Derule'751 in view of Berner and Hughes do not explicitly teach that the rare earth metal is claimed gadolinium, one of ordinary skill in the art would have found the use of gadolinium as the rare earth metal in the coating composition of Derule'751 in view of Berner and Hughes obvious and with expected success since gadolinium has similar properties as other rare earth metals, therefore, should behave similarly to other rare earth metals taught by Hughes.

15. Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Derule'751 in view of Berner, and further in view of Melotik.

The teachings of Derule'751 in view of Berner are discussed in paragraph 10 above. However, Derule'751 in view of Berner do not explicitly teach the claimed post treatment using a bath containing rare earth metals.

Melotik teaches an post treatment rinse for metal coatings, wherein the post treatment rinse solution is comprises at least 0.0005M of rare earth metal(col. 3 lines 20-27). Table II of Melotik further shows that an example of rare earth metal salt is cerous nitrate(i.e. Ce^{3+}).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the post treatment coating process of Melotik into the coating process of Derule'751 in view of Berner in order to substantially increase the corrosion and humidity resistance of conversion coated metal surfaces and to improve the surface's receptivity to subsequent adherent coats of paint as taught by Melotik(col. 1 lines 42-59).

In addition, the rare earth metal concentration in the post treatment solution as taught by Derule'751 in view of Berner and Melotik overlaps the claimed rare earth metal concentration of greater than or equal to $1x10^{-3}$ mole/l. Therefore, a prima facie case of obviousness exists. See MPEP 2144.04. The selection of claimed rare earth metal concentration range from the disclosed range of Derule'751 in view of Berner and Melotik would have been obvious to one skilled in the art since Derule'751 in view of

Berner and Melotik teach the same utilities in their disclosed rare earth metal concentration range.

Response to Arguments

16. Applicant's arguments filed 18 May 2009 have been fully considered but they are moot in view of the new grounds of rejection set forth above.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Caupin et al. US 5,507,861 teach a coating composition comprising monocarboxylic acids such as heptanoic acid and undecanoic acid, and oxidizing agent such as perborate. The pH of the coating composition is about 8.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LOIS ZHENG whose telephone number is (571)272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art Unit 1793

LLZ